THE MINERAL INDUSTRY OF

BRUNEI

By John C. Wu

Brunei is a small country on the northwestern coast of Borneo Island in Southeast Asia. The country's per capita income was the highest among the Southeast Asian countries because of export earnings from its crude petroleum and natural gas. The country's proven reserves of crude petroleum and natural gas were estimated to be 1.35 billion barrels and 391 billion cubic meters, respectively, in 2002 (Oil & Gas Journal, 2002b). In addition to its large resources of hydrocarbons, Brunei also had small resources of carbonate rocks, coal, kaolin, sand and gravel, and silica sand (Quazi, 1996, p. 1-7). In 2002, Brunei was the world's sixth largest exporter of liquefied natural gas (LNG). It ranked seventh in production of crude petroleum in the Asia and Pacific region (Oil & Gas Journal, 2002a, b).

In 2002, Brunei's economy as measured by real gross domestic product (GDP), to which the output of the oil and gas industry contributed greatly, grew by 4.1% compared with 1.5% in 2001 because of higher oil prices and increased output of oil and gas. The output of oil and gas accounted for more than 50% of GDP, and the exports of hydrocarbons, which were estimated to be $3.4 billion, accounted for about 90% of the total export earnings in 2002 (Far Eastern Economic Review, 2003).

To reduce the heavy reliance of its economy on the oil and gas industry, the Government, through the state-owned Brunei National Petroleum Co. (PetroleumBRUNEI), sought expressions of interest (EoIs) in 2002 from local and foreign companies for several large-scale petrochemical projects, which included naphtha-based-cracker, alpha-olefin, styrene, purified-terephthalic-acid, and other petrochemical plants. PetroleumBRUNEI, which was responsible for developing oil- and gas-based downstream industries, planned to bring the proposed facilities onstream by 2007. Foreign investors would be allowed to own 100% equity interest in these projects. Local and foreign investors also would likely be granted "pioneer" status. Under the investment incentive order of 2001, foreign and local investors with pioneer status would enjoy a 5-year tax holiday for investing between $278,600 and $1.4 million (B$500,000 and B$2.5 million) and an 8-year tax relief for investing more than $1.4 million. Pulau Muara Besar had been identified by PetroleumBRUNEI as the most suitable location for the proposed petrochemical industrial complex (Asian Chemical News, 2002).

To protect the environment and to fight chemical pollution, a new comprehensive law to deal with toxic waste had been drafted in 2001. The new law would cover the entire life cycle of chemicals from the time of their local manufacture and import to sale, use, classification, labeling, packaging, handling, storage, transportation, and disposal. In Brunei, the existing law applicable to toxic chemicals was the Poisons Act, which regulated pharmaceutical and pesticides but could not be used to regulate handling, transport, and disposal of hazardous materials and waste. In the drafted environmental order, water pollution control (part V), land pollution control (part VI), and hazardous substances control (part VII) would have provisions to regulate hazardous materials and waste management. According to the Environmental Unit of the Ministry of Development, the draft was to be finalized by the National Committee on the Environment in 2002 (Borneo Bulletin Online, 2001§, 2002§).

To extend the reserves of oil and gas, the Government of Brunei had opened its deepwater acreage off the coast of Brunei for oil and gas exploration. In January 2002, the Government, through PetroleumBRUNEI, awarded oil exploration rights for block J to a consortium of TotalFinaElf SA of France (60%), BHP Billiton Ltd. of Australia (25%), and Amerada Hess Corp. of the United States (15%). The deepwater block J covers an area of about 5,000 square kilometers (km2) and is about 100 kilometers (km) from the coast in water depths ranging from 1,300 meters (m) to 1,800 m. This was the country's first deepwater exploration award (BruDirect.com, 2002b§). In early 2002, PetroleumBRUNEI also awarded gas exploration rights for block K to a consortium of Royal Dutch/Shell (Royal Dutch Petroleum Co.) of the Netherlands, Conoco. Inc. of the United States, and Mitsubishi Corp. of Japan. Unlike concession contracts in the past, the two new awards were based on production-sharing contracts. Under the production-sharing contract, PetroleumBRUNEI would have greater control of its oil and gas resources (BruDirect.com, 2002e§).

Brunei's mineral industry consisted of an oil and gas sector and a very small sector of industrial minerals (mainly construction aggregates and sand and gravel). The oil and gas sector comprised the following operating companies: Brunei Shell Companies, TotalFinaElf, and Shell New Zealand Ltd. (formerly Fletcher Challenge Energy of New Zealand). Brunei Shell Companies conducted oil and gas exploration, produced and refined crude petroleum, produced and processed natural gas, marketed crude petroleum, refined petroleum products, and processed natural gas products. TotalFinaElf and Shell New Zealand conducted oil and gas exploration and produced natural gas and natural gas liquid (condensate). Amerada Hess, BHP Billiton, and Mitsubishi, which had signed production-sharing contracts with PetroleumBRUNEI in 2002, were expected to join other operating companies to conduct oil and gas exploration in deepwater blocks offshore Brunei in 2003. The industrial minerals sector comprised more than 20 small, privately owned companies that engaged in the production and marketing of construction aggregates, sand and gravel, and silica sand products and a cement company, which operated a clinker grinding plant for production of portland cement and such specialty cements as slag cement and oil well cement.

In 2002, the output of crude petroleum and condensate averaged about 197,300 barrels per day (bbl/d), and natural gas output averaged 30 million cubic meters per day. Brunei Shell Petroleum Co. (BSP) produced crude petroleum, natural gas, and natural gas liquid from 779 producing wells in 8 offshore fields (Southwest Ampa, Champion, Champion West, Enggang, Fairley, Fairley-Baram, Iron Duke, and Magpie) and 2 onshore fields (Rasau and Seria-Tali). TotalFinaElf and Shell New Zealand jointly produced natural

gas and natural gas liquids from seven producing wells in the offshore Maharaja Lela Field (Oil & Gas Journal, 2002c). Exports of crude petroleum went, in decreasing order, to Southeast Asian countries (mainly the Philippines, Singapore, and Thailand), Japan, the Republic of Korea, and the United States. Smaller sales were made to Australia, China, India, and New Zealand (Brunei Shell Petroleum Co. Sdn. Bhd., 2002§).

Of the total production of natural gas, about 10% was delivered to domestic powerplants for electricity generation, and 90% was for production of LNG. Production of LNG by Brunei Liquefied Natural Gas Sdn. Bhd. at the Lamut LNG plant was about 6.7 million metric tons (about 9.2 billion cubic meters) in 2002. About 90% of LNG was exported to Japan, and 10%, to the Republic of Korea (Oil and Gas Journal, 2002a).

During the past 3 years, BSP began investing heavily on two major projects to maintain production levels and to extend production for 30 to 40 more years. In August 2001, a decision was made by BSP to invest $79 million (B$135 million) for the development of the new Egret Field. In early 2002, BSP awarded a $22 million contract to Technip-Coflexip S.A. of France for its Egret Phase 1 Gas Development Project, about 43 km offshore from Seria. Technio-Coflexip (through its affiliates Technip Far East Sdn. Bhd. and Technip Engineering Brunei) would be responsible for project management, engineering, procurement, and fabrication. The project involved construction of a new 12-well drilling platform, a 25-km-long, 51-centimeter-diameter multiphase pipeline from the new platform to the existing Ampa-6 platform, a 15-km subsea electric cable for control and instrumentation, and modification to the existing facilities at the Ampa-6 and Fairley-4 complexes (BruDirect.com, 2002a§, d§).

BSP entered the second phase of its offshore Ampa-Fairley Rationalization Project in 2002, which would rejuvenate the Western Field infrastructure to continue producing for the next 30 years. The $347 million (B$600 million) project was first launched in May 2000. The scope of the project comprised the new onshore compression plant (OCP), offshore modifications, and laying of offshore pipelines. The construction of the OCP was managed by a consortium of OCG Technical Services Sdn. Bhd. of Malaysia and GE Nuovo Pignone of Italy, and the construction work was carried out by three Bruneian construction contractors (BruDirect.com, 2002c§).

Butra HeidelbergerCement Sdn. Bhd. (BHC) [a joint venture of Heidelberger Zement AG (HZ) of Germany and Butra Djajanti Cement Sdn. Bhd. of Brunei] was Brunei's sole cement producer. Its 500,000-metric-ton-per-year cement plant (a clinker grinding plant) is at Serasa Industrial Estate in Jalan Peruahaan, Serasa, about 2 km from Muara Town. All raw materials (clinker, gypsum, slag, and other additives) for cement manufacturing were imported. BHC produced ordinary portland cement and smaller quantities of slag cement, oil well cement, and sulfate resistance cement (Butra HeidelbergCement Sdn. Bhd., 2002§).

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Major Source of Information

Prime Minister's Department
Petroleum Unit
Jalan Mentri Besar
Bandar Seri Begawan BB3910

Brunei
Telephone: 673-2-380333
Fax: 673-2-383004
E-mail: brupet@brunet.bn

TABLE 1
BRUNEI: PRODUCTION OF MINERAL COMMODITIES[1]

Commodity[2]		1998	1999	2000	2001	2002[e]
Cement	thousand metric tons	216	208	232	227 [r]	230
Gas, natural:						
Gross	million cubic meters	10,704	11,206	11,627 [r]	11,687 [r]	12,000
Marketed	do.	9,863	11,627	10,751	10,967 [r]	11,200
Petroleum:						
Crude[3]	thousand 42-gallon barrels	57,446	66,741	70,482	71,199 [r]	72,000
Refinery products:	do.					
Gasoline	do.	1,572	1,630	1,581 [r]	1,647 [r]	1,650
Distillate fuel oil	do.	1,093	1,146	1,063	1,112 [r]	1,120
Residual fuel oil	do.	481	531	475	579 [r]	580
Other[4]	do.	776	659	554 [r]	497 [r]	500
Total	do.	3,922	3,966	3,673 [r]	3,835 [r]	3,850

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to total shown. [r]Revised.

[1]Table includes data available through May 30, 2003.

[2]In addition to the commodities listed, crude construction materials, such as sand and gravel and other varieties of stone, presumably are produced, but available information is inadequate to make reliable estimates of output levels.

[3]Includes condensate.

[4]Includes jet fuel, kerosene, refinery fuel, and refinery losses.

Sources: Prime Minister's Department, Petroleum Unit and U.S. Geological Survey Minerals Questionnaire, 2000 and 2001.